AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1.   (Currently amended) A computer program product, tangibly embodied on a machine-readable storage device, the computer program product comprising instructions operable to cause data processing apparatus to perform operations comprising:

displaying a user interface in a client program, the user interface having a plurality of controls, the plurality of controls including multiple types of controls, each control having a state and a control data structure, wherein the state of the control includes a data state and a view state;

for each control in the plurality of controls, storing the state of the control as a first state for the control in the control data structure;

receiving user input comprising a change to the state of a control in the plurality of controls;

updating the state of the control based on the user input;

storing the updated state of the control as a second state for the control in the control data structure;

receiving user input comprising a request to undo the change;

determining whether the change affects the data state of the control;

determining whether the change affects the view state of the

control; and

restoring the state of the control to reflect the first state for the control.

2. (Previously Presented) The computer program product of claim 1, wherein the multiple types of controls include one or more of a text field control type, a radio button control type, a table control type, a tray control type, and a menu control type.

3. (Currently amended) The computer program product of claim 1, wherein the state of the control includes a data state and a view state, and wherein the operations further comprise:

determining whether the change affects the data state or the view state of the control; and

restoring the state of the control only if the change affects the data state of the control.

4. (Previously Presented) The computer program product of claim 1, wherein the operations further comprise:

receiving user input comprising a request to redo the change to the control; and

restoring the state of the control to reflect the second state for the control.

5. (Previously Presented) The computer program product of claim 1, wherein the user input comprising the request to undo the change is received while focus is not on the control.

6. (Previously Presented) The computer program product of claim 1, wherein restoring the state of the control includes restoring a state of another control that shares data with the control.

7. (Canceled).

8. (Previously Presented) The computer program product of claim 1, wherein restoring the state of the control occurs prior to transmitting the state of the control to a server.

9. (Currently amended) A computer program product, tangibly embodied on a machine-readable storage device, the computer program product comprising instructions operable to cause data processing apparatus to perform operations comprising:

generating a plurality of data structures that store application data and associations between the application data and a plurality of application controls, wherein each application control of the plurality of application controls has a state and a control data structure, wherein the state of each application control of the plurality of application controls includes a data state and a view state, and wherein the plurality of application controls are each application control of the plurality of application controls is rendered based on the application data;

detecting that at least one application control of the plurality of application controls has changed from a prior state to a new state;

<u>determining whether the change affects the data state of the at least one</u>

<u>application control;</u>

<u>determining whether the change affects the view state of the at least one</u>

<u>application control;</u>

recording the prior state of the at least one application control;

updating at least one of the plurality of data structures based on the new state;

receiving user input requesting that an undo operation be performed;

performing the undo operation by restoring the at least one application control

to the prior state; and

updating the at least one data structure <u>of the plurality of data structures</u>

based on the prior state.

10. (Currently amended) The computer program product of claim 9,

wherein the at least one data structure <u>of the plurality of data structures</u> is at least

one data tree.

11. (Currently amended) The computer program product of claim 9, wherein

the at least one data structure <u>of the plurality of data structures</u> is stored on a client

device.

12. (Previously Presented) The computer program product of claim 9,

wherein the plurality of application controls include multiple types of controls.

13.   (Previously Presented) The computer program product of claim 9,

wherein the associations between the application data and the plurality of application

controls are defined by metadata.

14.   (Currently amended) An apparatus comprising:

means for displaying a user interface in a client program, the user interface

having a plurality of controls, the plurality of controls including multiple types of controls,

each control having a state and a control data structure, wherein the state of the control

includes a data state and a view state;

means for, for each control in the plurality of controls, storing the state of the

control as a first state for the control in the control data structure;

means for receiving user input comprising a change to the state of a control in

the plurality of controls;

means for updating the state of the control based on the user input;

means for storing the updated state of the control as a second state for the

control in the control data structure;

means for receiving user input comprising a request to undo the change;

means for determining whether the change affects the data state of the control;

means for determining whether the change affects the view state of the

control; and

means for restoring the state of the control to reflect the first state for the control.